

Applicant : Abraham Phillip Lee
Appl. No. : 10/777,470
Examiner : Mui, Christine T
Docket No. : 703538.4033

Remarks

Applicants have amended the specification to correct some typographical errors. Claims 1-13, 15, 16-20, and 31-41 are pending in this application. Claims 14, 21-30 have been cancelled without prejudice and without acquiescing to the examiner's rejections. Claims 1, 15, 31, and 38 have been amended.

I. Rejections under 35 USC §102

Claims 1-5 and 13 are rejected under 35 USC §102, as being anticipated by Klinksiek (CA 2 304 644). Applicants respectfully traverse.

Klinksiek discloses a device for the preparation of a silicone/silane emulsion composed of a silicone/silane-containing active substance component and an aqueous phase with a first mixing station for the emulsion components fed via pumps P1, P2, and P3 from three respective storage tanks (Klinksiek at 4:17-23). However, Klinksiek does not explain or mention how the inlet streams are configured – only that there is a mixing of two components. (Klinksiek at 6:21-26;14:9-14). Notably, pump P2 does not inject anything directly into the mixing station (its injections are subsumed in the stream from pump P1 before it reaches the mixing station), so it cannot be the source of an independent inlet stream (See Klinksiek at 14:23-26, Fig. 2).

Applicants respectfully submit that claim 1, as amended, is patentable because Klinksiek does not teach “forming a sheath flow from three inlet streams wherein a first stream comprising a first solution is sandwiched between second and third streams comprising a second solution; and generating a droplet from the first stream by controlling shear forces generated by the second and third streams acting upon the first stream.” In contrast, the particle emulsions as disclosed by Klinksiek are formed as a result of injecting silicon oil into an aqueous emulsifier solution that requires further processing of the pre-emulsion mixture through a jet disperser. (Klinksiek at 6:21-30). The homogenization step (through a jet disperser) is necessary in order to stabilize the emulsion. (See Klinksiek at 1:18-21). Nothing in Klinksiek teaches or suggests controlling shear forces at the stream interfaces to effect droplet formation.

Claims 2-5, 13, and 15 depend from claim 1 and are therefore patentable for at

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least the reasons given in claim 1.

The examiner also rejected claims 1-4, and 7 under 35 USC 102(b) as being anticipated by WO 02/068104 to Higuchi, which has a publication date of September 6, 2002. The subject application claims priority to U.S. Provisional Patent Application Serial No. 60/446,798, filed on February 11, 2003. Thus, Higuchi cannot be considered to anticipate the claims of the subject application under 35 USC 102(b), but rather under 35 USC 102(a). Filed herewith is a declaration of the inventors of the subject application, indicating that they conceived of the subject matter of the claims prior to January 1, 2002 and acted diligently to reduce to practice the subject matter of the claims until filing of the '798 provisional on February 11, 2003. As a result, the effective date of the invention of the subject claims antedates the publication date of Higuchi and, thus, Higuchi is not prior art to the subject application under 35 USC 102(a).

II. Rejections under 35 USC §103

Claims 6-12, 16-20, 31-41 are rejected under 35 USC § 103 as being unpatentable over Klinksiek in view of Handa et al, Nisisako et al., Quake USP 6,211,6540, Lee USP 6,733,172, Stone WO 2004/002327, Spence USP 6,540,895, and Thorsen. Applicants respectfully traverse.

Applicants respectfully submit that the office action fails to set forth a prima facie case of invalidity in light of Applicants' claim amendments and remarks above. Claims 6-12, 16-20 depend from claim 1 and are therefore patentable for at least the reasons given above in regard to claim 1 as amended.

Similarly, claim 31 is amended in the same way as claim 1 and is patentable for the reasons given above in regard to claim 1 as amended. Claims 32-37 depend from claim 31 and are therefore patentable for at least the reasons given above.

Regarding claim 38, the examiner has interpreted that Klinksiek discloses two aqueous phase channels and one silicone oil channel, and that the junction is where all three streams meet and are fed together to form a final emulsion is mixed. Notwithstanding that Klinksiek does not explicitly discuss the use of two different aqueous phase channels, the resulting combination is only a pre-emulsion mixture that

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requires additional processing by the jet disperser. Therefore, Klinksiek does not disclose an output channel in communication with the microchannel junction wherein the output channel is set to receive droplets formed from shearing forces at interfaces between the first solution and the second solution, as required by the amended language of claim 38. Additionally, the examiner has not identified any reasons why a computer that detects cell characteristics as disclosed by Spence should be combined with droplets that are produced from multiple input microchannels with the aid of pumps.

Claims 39-41 depend from claim 38 and are therefore patentable for at least the reasons given in claim 38.

Claim 39 is additionally patentable over the cited references because Thorsen discloses only microfluidic channels that meet at a T-junction and combine to form one output channel. (See Thorsen at Fig. 1). Lee discloses a method to split droplets by using pumps to stretch out the droplet. Neither Thorsen nor Lee suggest or teach a droplet splitter that has two or more daughter channels in communication with the splitter input channel.

The examiner also rejected claims 5-6, 8-13, 15-20, and 31-41 under 35 USC 103 as unpatentable over Higuchi in view of Klinksiek CA 2 304 644, Handa et al, Nisisako et al., Quake USP 6,211,6540, Lee USP 6,733,172, Stone WO 2004/002327, Spence USP 6,540,895, and Thorsen. As noted above, Higuchi is not prior art under 35 USC 102 to the claims of the subject application and, thus, cannot be utilized to form a prima facie case of obviousness under 35 USC 103.

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III. Conclusion

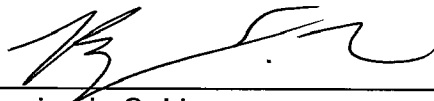
Prompt and favorable action on the merits of the claims is earnestly solicited. Should the Examiner have any questions or comments, the undersigned can be reached at (949) 567-6700.

The Commissioner is authorized to charge any fee which may be required in connection with this Amendment to deposit account No. 15-0665.

Respectfully submitted,

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